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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,418	06/26/2003	Tadao Endo	03500.011909.1	5676

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EXAMINER

NGUYEN, LUONG TRUNG

ART UNIT PAPER NUMBER

2622

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/606,418	Applicant(s) ENDO ET AL.	
	Examiner LUONG T. NGUYEN	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 66 and 67 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 66 and 67 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 08/815,532.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 08/815,532, filed on 3/12/1997.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 66-67 are objected to because of the following informalities:

Claim 66 (line 1), "66. A radiation image pick-up apparatus" should be changed to --66. (New) A radiation image pick-up apparatus--.

Since claim 66 (line 5) recites "signal wires", Claim 66 (lines 15, 22), "signal line" should be changed to --signal wire--.

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Claim 66 (line 19), "the output signal said buffer" should be changed to --the output signal of said buffer--.

Claim 66 (line 23), "the output wire" should be changed to --the signal wire--.

Claim 66 (line 24), claim 67 (line 25), "a reset switch" should be changed to --another reset switch--.

Since claim 67 (line 7) recites "signal wires", Claim 67 (lines 16, 23), "signal line" should be changed to --signal wire--.

Claim 67 (line 24), "the output wire" should be changed to --the signal wire--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 66-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamasaki (US 5,274,459) in view of Mizoguchi et al. (US 4,937,674) further in view of Miyake (US 5,198,905) and Pearsall et al. (US 5,515,102) and Olmstead (US 5,770,847).

Regarding claims 66, 67, Hamasaki discloses a solid state image sensing device comprising a light source (column 2, lines 1-3); photoelectric conversion circuit (see figure 1); plurality of photoelectric conversion elements, disclosed as photo sensing section 1 (figure 1, column 2, lines 50-55); switching elements having output terminals and control terminals,

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disclose as vertical selection transistor 5 (figure 1, column 2, lines 50-62); signal wires connected to the output terminals of the switching elements, disclosed as vertical signal lines 2 (figure 1, column 2, lines 50-62); drive wires, disclosed as horizontal selection line 3; a driving circuit section, disclosed as vertical scanning circuit 9 (column 2, lines 63-68); a reading circuit section, disclosed as combination of transistor 10, buffer amplifier 14, switches 15a, 15 b, buffer amplifier 16, switch 17, and horizontal scanning circuit 19 (figure 1); analog operational amplifier, disclosed as buffer amplifier 14 (figure 1 column 3, lines 20-38); a buffer amplifier, disclosed as buffer amplifier 16 (figure 1 column 3, lines 20-38); a transfer switch, disclosed as switches 15a, 15b (figure 1, column 3, lines 20-38); a capacitor, disclosed as capacitors C1, C2 (figure 1, column 3, lines 20-38); reading switch, disclosed as switch 17 (figure 1, column 3, lines 20-38); reset switch, disclosed as transistor 10 (figure 1, column 3, lines 5-20); sample and hold (sample and hold capacitors C1 and C2, figure 1, column 3, lines 20-38).

Hamasaki fails to specifically disclose wherein said reset switch is adapted to reset said signal wires after a sample-and-hold of the output signal from said analog operational amplifier through said transfer switch to said capacitor. However, Mizoguchi et al. teach the resetting pulse ϕ_R is raised to high level after the sample holding pulse ϕ_{SH} has been lowered to the low level (figure 10, column 8, lines 22-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Hamasaki by the teaching of Mizoguchi et al. in order to provide a solid-state imaging device which exhibits a very high blooming resistance (column 6, lines 4-6).

Hamasaki and Mizoguchi et al. fail to specifically disclose an insulating substrate; and wherein the photoelectric conversion elements are formed from amorphous semiconductor.

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However, Miyake teaches a substrate 21 made of glass (figure 4, column 5, line 11); and photodetecting elements 11" has a structure including an amorphous silicon layer (figures 2 and 3, column 5, lines 5-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system in Hamasaki and Mizoguchi et al. by the teaching of Miyake in order to provide an image sensor which minimizes the electrical interference among the signal lines and hence can exactly output charges from signal lines (column 3, lines 37-41).

Hamasaki, Mizoguchi et al. and Miyake fail to specifically disclose the driving circuit and reading circuit sections are formed from crystalline semiconductor. However, Pearsall et al. teach CCDs are fabricated from silicon which comprises atom of crystalline silicon (column 1, lines 20-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system in Hamasaki, Mizoguchi et al., Miyake by the teaching of Pearsall et al. in order to take advantage of inherent characteristics of the silicon crystal lattice (column 1, lines 20-23).

Hamasaki, Mizoguchi et al., Miyake and Pearsall et al. fail to disclose said reading circuit section further comprising, for each signal line, a capacitor element connected in series in the output wire from the analog operational amplifier, for permitting only alternating-current components to pass, and a reset switch coupled to said capacitor element for DC restoration. However, Olmstead teaches a DC restoration circuit 239, which includes a capacitor 242 and a switch 243. The signal 240 from CCD chip 204 is buffered by an amplifier 241 and then output to DC restoration circuit 239 for DC restoration (figure 8A, column 9, lines 5-54). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

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modify the system in Hamasaki, Mizoguchi et al., Miyake and Pearsall et al. by the teaching of Olmstead in order to reduce kTC noise (column 8, lines 45-55, column 9, lines 50-54).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hamasaki (US 5,187,583) discloses solid state imager which reduces the noise and improves the sensitivity.

Franklin et al. (US 6,034,725) discloses semiconductor image sensor with an insulating barrier layer.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID L. OMETZ can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LN
08/05/06



LUONG T. NGUYEN
PATENT EXAMINER